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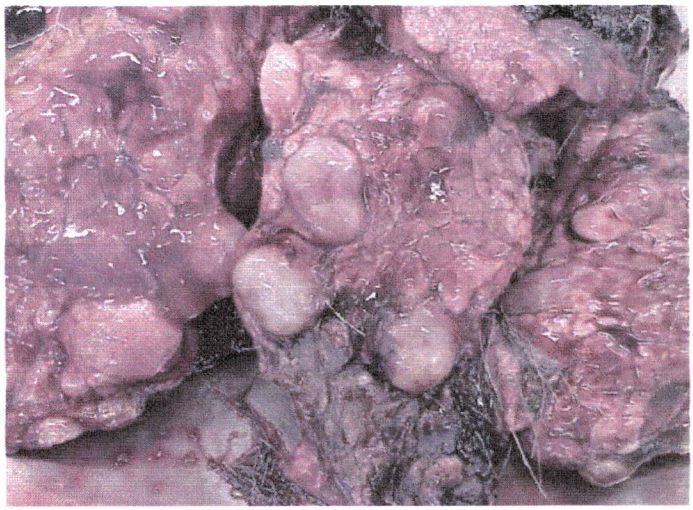
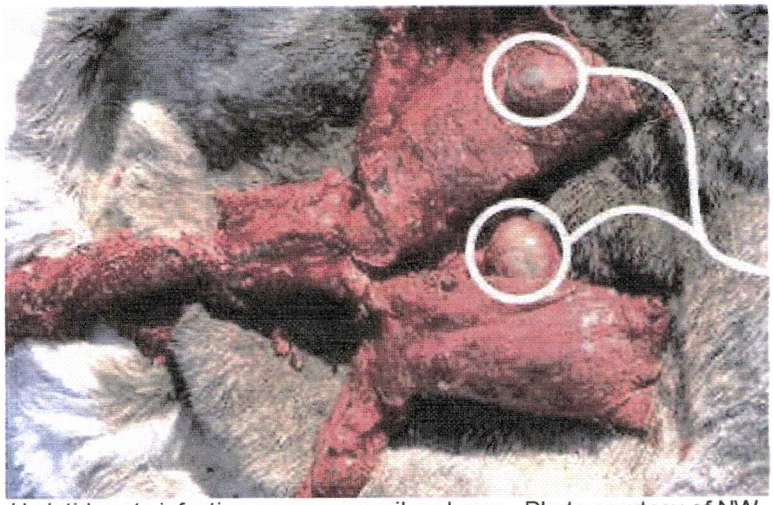
Two-Thirds of Idaho Wolf Carcasses Examined Have Thousands of Hydatid Disease Tapeworms

By George Dovel



Hydatid cysts infect lungs, liver, and other internal organs of big game animals. Michigan DNR Wildlife Disease Lab photo.



Hydatid cysts infecting moose or caribou lungs. Photo courtesy of NW Territories Department of Environment and Natural Resources.

My first *Outdoorsman* article on hydatid disease caused by the tiny *Echinococcosis granulosus* tapeworm was published nearly 40 years ago. Back then we had many readers in Alaska and northern Canada where the cysts were present in moose and caribou and my article included statistics on the number of reported human deaths from these cysts over a 50-year period, and the decline in deaths once outdoorsmen learned what precautions were necessary to prevent humans from being infected.

In Alaska alone, over 300 cases of hydatid disease in humans had been reported since 1950 as a result of canids (dog family), primarily wolves, contaminating the landscape with billions of *E. granulosus* eggs in their feces (called "scat" by biologists). These invisible eggs are ingested by grazing animals, both wild and domestic, and occasionally by humans who release clouds of the eggs into the air by kicking the scat or picking it up to see what the wolf had been eating.

As with many other parasites, the eggs are very hardy and reportedly exist in extremes of weather for long periods, virtually blanketing patches of habitat where some are swallowed or inhaled. As Dr. Valerius Geist explained in his Feb-Mar 2006 *Outdoorsman* article entitled *Information for Outdoorsmen in Areas Where Wolves Have Become Common*, "(once they are ingested by animals or humans) the larvae move into major capillary beds – liver, lung, brain – where they develop into large cysts full of tiny tapeworm heads."

He continued, "These cysts can kill infected persons unless they are diagnosed and removed surgically. It consequently behooves us (a) to insure that this disease does not become widespread, and (b) that hunters and other outdoorsmen know that wolf scats and coyote scats should never be touched or kicked."

Dr. Geist's article also warned, "If we generate dense wolf populations it is inevitable that such lethal diseases as Hydatid disease become established." Because wolves and other canines perpetuate the disease by eating the organs of animals containing the cysts, and the tapeworms live and lay millions of eggs in their lower intestines, the logical way to insure the disease did not develop was not to import Canadian wolves that were already infected with the parasites.

Hydatid Disease – *continued from page 1*

Despite Warnings From Experts. FWS and IDFG Ignored Diseases, Parasites Spread by Wolves

This was common knowledge among wildlife biologists in northern Canada and in Alaska where FWS biologist Ed Bangs was stationed prior to being assigned to head the Northern Rocky Mountain Wolf Recovery Team. Yet in the July 1993 Draft Environmental Impact Statement (DEIS) provided to the public, Bangs chose not to evaluate the impact of wolf recovery on diseases and parasites (1993 DEIS page 1-17).

This alarmed a number of experts on pathogens and parasites, including Will Graves who began his career working to eradicate foot and mouth disease in Mexico. As an interpreter who conducted research of Russian wolf impacts on wildlife, livestock and humans for several decades, Graves provided Bangs with information that wolves in Russia carry 50 types of worms and parasites, including *Echinococcosis* and others with various degrees of danger to both animals and humans.

In his Oct. 3, 1993 written testimony to Bangs, Graves also cited the results of a 10-year Russian control study in which failure to kill almost all of the wolves by each spring resulted in up to 100% parasite infection rate of moose and wild boar with an infection incidence of up to 30-40 per animal. This compared to a 31% infection rate with an incidence of only 3-5 per animal where wolves were nearly eliminated each winter.

Graves' letter emphasized that despite the existence of foxes, raccoons and domestic dogs, wolves were always the basic source of parasite infections in moose and boar. He also emphasized the toll this would take on livestock producers and, along with other expert respondents, requested a detailed study on the potential impact wolves would have in regard to carrying, harboring and spreading disease.

In the final 414-page Gray Wolf EIS (FEIS) dated April 14, 1994, only a third of a page addresses "Diseases and Parasites to and from Wolves" (Chapter 5 Page 55). It states: "Most respondents who commented on this issue expressed concern about diseases and parasites introduced wolves could transfer to other animals in recovery areas."

Bangs' response states, "Wolves will be given vaccinations when they are handled to reduce the chances of them catching diseases from coyotes and other canids. Then Bangs stated, "Wolves will not significantly increase the transmission of rabies and other diseases," yet offered nothing to substantiate his false claim.

FWS Implies Graves' Facts are Only His Opinion

In "Appendices" Page 59, Bangs included a letter from FWS NRM Wolf Recovery Coordinator Steve Fritts to a Russian biology professor (also a member of the IUCN Wolf Specialist Group) asking him whether he thought the information in Mr. Graves' letter is correct. On Page 60, that professor and another "IUCN Wolf Specialist" responded that Graves' information "represents the opinion of only one side in (a) long and highly speculative discussion of (the) wolf role in Russia."

The two Russian wolf advocates failed to refute anything in Will Graves' testimony yet the inference that his research was speculative rather than factual was apparently the only excuse Bangs used for his failure to heed Graves' warnings. A dozen years earlier Bangs was the lead author of a Kenai Peninsula research report in which he similarly denied the impact of wolf predation on Alaska moose populations.

As Dr. Geist has pointed out, the existence of hydatid disease (and other unique parasites and diseases in wild mammals and fish that some of us are not used to) is a fact of life that you learn to live with in the north country – or in many other places you choose to live or visit. The wildlife management agencies in Alaska and many of the Canadian provinces provide field guides explaining how to protect yourself and your animals from unique wildlife diseases and parasites you may encounter.

But although Idaho has the most wilderness in the lower 48 states, it has 15 times as many people per square mile as Alaska, countless more pets and domestic animals and 150 times as many cattle. Any of these creatures found in areas where wolves traveled at some time of the year are at risk of becoming infected with the cysts – or if dogs – becoming carriers of the worms and distributors of the eggs which infect other animals and humans with hydatid disease.

The highly touted testing of blood and fecal samples from live-trapped deer, elk, etc. does not reveal the existence of hydatid cysts, yet that was the only reported testing performed for 10-1/2 years after the first wolves were released in central Idaho and Yellowstone Park. In a January 2005 *Outdoorsman* article, I provided a photo of hydatid cysts in moose lungs, described the disease, and suggested legislators would benefit from the type of information provided by Alaska and Canada.

IDFG Officially Discovered Hydatid Disease in 2005-06

In mid 2005, state wildlife health officials in Idaho began conducting necropcies (post mortem examinations) of many wildlife species. As in Minnesota, Michigan and Wisconsin, they found a number of the primary big game species they tested were infected with hydatid cysts – but only the Great Lakes wildlife agencies reported that fact to the public.

As a matter of fact, by the time Dr. Geist's warning about hydatid cysts appeared in the Feb-Mar 2006 *Outdoorsman*, I also published Minnesota's finding that wolves were infecting livestock pastures and moose habitat with *Neospora caninum*, the parasite that causes abortions in cattle and moose and other members of the deer family. The upper left photo of hydatid cysts on the first page of this article was copied from information provided to its citizens by the Michigan DNR.

It is reasonable to assume that Michigan DNR's publication of warnings to use protective gear when handling wolf scat and wolf carcasses and not let your dog eat internal organs from deer, moose, etc. may have saved a significant number of hunters and/or their children from becoming infected with hydatid disease.

It is also reasonable to assume that Idaho Fish and Game's failure to publish similar warnings during the four hunting seasons that have come and gone since the disease was officially discovered in Idaho may have allowed a significant number of Idaho hunters and/or their children to become infected with hydatid disease.

On December 13, 2009 in *Idaho Hunting Today* and other *Black Bear Blog* websites, Tom Remington first revealed the results of the Washington laboratory checking Idaho and Montana wolf intestines for *E. granulosus* tapeworms. Mr. Remington was probably not aware of the 10-page September 2006 IDFG Wildlife Health Laboratory (WHL) Report which included only the following sentence about IDFG's discovery of hydatid disease in mule deer, elk and a mountain goat during necropsy (post mortem) examinations of various species:

"In addition, 1 mountain goat and several mule deer and elk were found to have hydatid cysts in the lungs (*Echinococcus granulosa*), likely with wolves as the definitive host of this previously unrecognized parasite in the state."

The report states: "Wolf necropsies indicated the presence of lice," but makes no mention of finding *E. granulosus* eggs in the wolf feces or adult worms in the wolf intestines. It also mentions examining fecal samples from 10 live wolves that were captured but again there is no mention of the existence of the eggs which resulted in the deer, elk and a goat being infected with hydatid disease.

The report, published by IDFG Director Steve Huffaker, was signed by IDFG Veterinarians Mark Drew and Phil Mamer and approved by IDFG Wildlife Program Coordinator Dale Toweill and IDFG Wildlife Bureau Chief (now Deputy Director) Jim Unsworth.

Yet the September 2007 WHL Report published by new IDFG Director Cal Groen and signed by the same four IDFG officials states:

"Wolf necropsies indicated the continued presence of lice (*Trichodectes canis*) and tape worm (*Echinococcus*), previously detected last year in Idaho. Wolves are most likely the definitive host of this previously unrecognized parasite in the state". (emphasis added)

In other words this 2007 Report admitted the worms were discovered in wolves in 2005-2006 but failed to mention the hydatid cysts that were also discovered in mule deer, elk and the mountain goat. The 2008 IDFG WHL Report contained exactly the same sentence about tapeworms in wolves as the 2007 report but again failed to mention the diseased deer and elk.

To most of us the announcement of one more tapeworm found in a canine, especially a tiny one whose name we can neither pronounce nor remember, hardly merits a second glance. But when that worm is a new biotype that has never been reported south of the U.S-Canadian border, is already infecting deer and elk with a disease known to range from benign to debilitating to occasionally fatal in humans, and is obviously being spread by wolves across thousands of square miles, that would raise red flags of concern in most intelligent people.

Most legislators and F&G Commissioners who received a copy of the September 2006 WHL Report that actually mentioned the hydatid cysts being found in deer and elk, did not find the word "disease" and had no clue what the presence of the cysts implied. It was the F&G Department's responsibility to explain the parasite's life cycle and provide the public with precautions that should be taken when skinning or handling wolves or their pelts.

I regularly receive emails with photos like this from successful wolf hunters in Idaho who are "hugging" (posing with) the animals without wearing disposable gloves and face masks to prevent the threat of infection from touching the pelt with bare hands.

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Hydatid Disease – continued from page 3

Funding of the activities reported in the WHL Annual Reports discussed earlier is part hunter and fisherman license funds and part P-R and D-J federal excise taxes paid by those same hunters and fishermen. The projects are approved and the federal funds administered by the U.S. Fish and Wildlife Service (FWS) – the same agency that shares responsibility with IDFG for introducing the non-native wolves and their non-native parasites and diseases.

If Fish and Game officials had told the media, Idaho citizens and their legislators the truth about the spread of hydatid disease by excessive numbers of wolves when they first knew of its existence, the public outcry would almost certainly have prevented managing for up to five times as many wolves as was agreed upon.

In 2008 when IDFG Director Groen and Idaho Fish and Game Commissioner Gary Power informed the Legislature of their intention not to reduce the number of wolves in Idaho, both had known about the rapid spread of *E. granulosis* in wolves and the resulting spread of hydatid disease in elk and deer for several years. In fact, in August of 2006, IDFG Veterinarian Mark Drew made a presentation to the Wildlife Disease Association Annual Meeting at the University of Connecticut titled "Possible introduction of parasites with wolves in Idaho."

ID, MT F&G Ignored Responsibility to Warn Public

Instead of fulfilling their responsibility to see that hunters and ranchers in Idaho and Montana received instruction on how to protect themselves from becoming infected, from 2006-2008 Drew and two of his counterparts from Montana participated in the evaluation of the lower intestines of 123 more wolves from Idaho and Montana. This is the study reported by Tom Remington on Dec. 13, 2009, in which 62% of Idaho wolves and 63% of Montana wolves contained *E. granulosis* tapeworms, and 71% of all the wolves tested contained *Taenia sp*, also predicted by Will Graves.

The study report says: "The detection of thousands of tapeworms per wolf was a common finding," and also said: "Based on our results, the parasite is now well established in wolves in these states and is documented in elk, mule deer, and a mountain goat as intermediate hosts." Of the wolves that contained *E. granulosis*, more than half contained more than 1,000 worms per wolf.

To put that in perspective, if each tapeworm can produce up to 1,000 eggs every 10 days for two years as is reported, 1,000 wolves with 1,000 tapeworms each are capable of spreading up to 73 billion eggs over the landscape in two years! The study provided a map of wolf locations indicating that areas with the highest known wolf density also have the highest percent of infected wolves (exactly as predicted by Dr. Geist).

The study reported that the prevalence of *E. granulosis* tapeworms in wolves in Canada, Alaska and Minnesota varied from 14% to 72% and said the 63% rate found in Idaho and Montana was comparable. But if one subtracts the strip across southern Idaho where few wolves exist and only two that were tested had the parasite, the prevalence of tapeworms in the areas with higher wolf densities was almost 90 percent!

During the past 20 years, medical case histories suggest that the course of the northern (sylvatic) strain of Hydatid Disease where wolves infect wild cervids (deer, elk, moose, etc.) is *normally* less severe on most humans than the domestic (pastoral) strain where dogs infect domestic sheep and other ruminants. The authors of the wolf parasite study used this information to try to downplay the potential impact of hydatid disease transmitted by wolves to humans in Idaho and Montana.

They also included the following statement to create the false impression that there is limited chance of Idaho and Montana residents becoming infected: "Most human cases of hydatid disease have been detected in indigenous peoples who hunt wild cervids or are reindeer herders with dogs." At least part of that statement is accurate because most of the people who live in isolated areas and are more exposed are either Indians or Eskimos.

But they neglect to mention that several hundred thousand people in Idaho and Montana also hunt wild cervids and thousands more work or recreate where wolves have contaminated the land and drinking water with the parasite eggs. Unless the cysts are formed in the brain, heart, spleen or kidneys, infected people may carry them undetected for years, while they slowly grow larger until they eventually create severe problems or death.

Because the death of most people from so-called natural causes is attributed to heart failure, etc., without an autopsy being performed, the actual number of deaths resulting from hydatid disease remains a matter of speculation. Case histories reveal that detection of hydatid disease in living humans often occurs as a result of a CT Scan or Ultrasound performed for another reason.

Dr. Geist's reply to the lack of concern expressed for humans who will become infected was, "It's nothing to fool around with. Getting an *Echinococcus* cyst of any kind is no laughing matter as it can grow not only on the liver or the lungs, but also in the brain. And then it's fatal."

He also asked if another parasite, *E. multilocularis*, found in Alberta wolves, also exists in the transplanted wolves in Idaho and Montana. "(It's) much more virulent than *Echinococcus granulosus* of any strain, we cannot encapsulate this cyst, and it grows and buds off like a cancer infecting different parts of the body incessantly."

(NOTE: Three separate studies conducted over a 10-year period in Minnesota concluded that 87% of moose mortality is related to parasites and infectious diseases. The insanity of pretending to restore "healthy" ecosystems by allowing uncontrolled large carnivores to spread parasites and diseases is becoming painfully obvious – ED)

IDFG "White Paper" Response to Concerns About Wolves Introducing New Strain of Hydatid Disease

By George Dovel

During the third week in January, I received a copy of the following well-circulated email from Idaho Dept. of Fish and Game Panhandle Region Supervisor Chip Corsi to the Panhandle Region employees he supervises:

"Some of you may have seen the latest from George Dovel's "The Outdoorsman". Based on Mark's (*IDFG veterinarian Mark Drew*) assessments (attached), human health risk is quite low, provided you avoid consuming things like canid feces and uncooked organs; and I think suggests Dovel's interpretation is more than a bit sensationalized. If you are handling wolves or coyotes, wear gloves. Risk to humans does not appear to be any greater than with other parasites found in wildlife that we, and hunters/trappers, routinely handle."

At the risk of being accused of using this page for a personal rebuttal, I shall point out that here's a biologist who drew $84,000 in wages plus liberal benefits in FY 2009, yet who is willing to ignore biology in order to divert attention from the real issue. By concealing the fact that a *new strain* of *E. granulosus* tapeworm was contaminating tens of thousands of square miles of Idaho during the past four years, IDFG caused irreparable harm.

It put an unknown number of Idahoans at risk of being infected with a new strain of hydatid disease, including the Panhandle Region IDFG employees under Corsi's supervision. The Department's warning to wear gloves resulted from the truth finally being exposed, but it came four years too late. And Corsi's inference that we must eat canine feces to become infected has generated emails from veterinarians in several states asking if Idaho biologists are really that dumb.

IDFG Officials Ignore CDC Warning

The National Center for Disease Control (CDC) in Atlanta issued a fact sheet on *Aveolar Echinococcocis* (AE), the other variety of Echinococcocis disease that also exists in Montana, and is spread to humans by the *E. multiclocularis* tapeworm which infects rodents and humans rather than big game and humans. The fact sheet, dated September 23, 2004, includes the following warnings applicable to both tapeworms whose eggs look exactly the same and are spread in exactly the same fashion:

- Don't touch a fox, coyote, or other wild canine, dead or alive, unless you are wearing gloves.
- After handling pets, always wash your hands with soap and warm water.
- Do not collect or eat wild fruits or vegetables picked directly from the ground. All wild-picked foods should be washed carefully or cooked before eating.

"Because wild coyotes, foxes, and wolves are being trapped and transported to states where *E.* [illegible] increased risk of spreading the disease to animals and humans."

IDFG "White Paper" Claims Potential for Human Exposure is "Relatively Low"

In the "White Paper" provided to the Idaho Legislature by IDFG Veterinarian Mark Drew and the Idaho Dept. of Agriculture, the view that Hydatid disease does not represent a serious threat to residents of Idaho and Montana mirrors the opinion expressed by Dr. Robert Rausch. In several published papers he considers the disease a threat only to indigenous (native) people who live with dogs in unsanitary conditions.

Rausch, a Professor Emeritus at the University of Washington, was the expert who identified the parasites in the study of Idaho and Montana wolf lower intestines conducted by Drew, Foreyt et al. He also participated in the review of 101 cases of cystic hydatid disease in Alaska published in 1968 by Wilson et al discussed in another article in this issue.

If you have already read that article, you will recall the authors in the Edmonton and Winnipeg reviews of medical case histories were critical of the 1968 study because the subjects had no symptoms and were not seeking medial treatment. Like them, most people infected with hydatid disease have the cysts growing inside them for 10-15 years before they either grow large enough to create problems or rupture.

During that extended period the cysts can be described as "benign" but eventually some of them will become painful and a few will cause sudden death. Unless an autopsy is performed the real cause of death may never be known.

On January 25, 2010 I emailed a copy of the "white paper" provided to the Legislature to Dr. Valerius Geist and asked for his comments. The following is his response which should be read carefully by everyone:

Dear Friends,

The important point about *Echinococcus granulosus* is not that it is a threat to hunters or biologists in the field, as spreading a bit of sensible know-how about proper sanitary measures will reduce chances of infections.

The problem with hydatid disease is that it is transmitted to dogs in rural areas, and that sanitary measures then are difficult to implement. When the

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Idaho's Official Response – *continued from page 6*

infection of elk and deer with hydatid cysts exceeds half the population, then ranch dogs are at risk picking up the disease as the chances are high that they will feed when not supervised on dead deer and elk or on offal left by hunters.

Unbeknown to their owners the infected dogs begin to fill the yard with tapeworm eggs in an ongoing fashion. Even if the dog is not allowed into the house, people walking through the yard will carry the eggs into the house with dirt on their boots.

In any such house raising children, toddlers will be crawling on the floor and they will gather dust and dirt on their hands and put their hands in their mouth. Therefore wherever you have deer or elk around farms, ranches and hamlets, and wherever in such abodes there are dogs roaming about, there is a high probability that tapeworm eggs will be brought into homes continually. It is also hard to imagine such dogs not getting petted.

Since hydatid disease is a silent disease that takes time to develop, there is not likely to be a problem till a number of people down the road are affected seriously. Once detected, even the sylvatic form of *E. granulosus* is likely to lead to surgery – no insignificant medical intervention even if quite successful.

Some cases will be fatal because cysts do implant in the brain, even if most implant in the lungs and liver. We need to get on with deciphering how this disease can be eradicated in our game herds.

In Finland it was achieved, till colonizing wolves brought it once more from Russia. Since the much worse E. multilocularis is spreading in the NW and resides in coyotes, coyote hunters need to be informed to take sensible precautions.

Cheers, Val Geist

The claim by Montana FWP Veterinarian Deborah McCauley that she doesn't believe the Echinococcus tapeworm will have any harmful effect on the Montana's elk herds, ignores numerous research in other states, provinces and countries indicating that the increase in parasite infestation inevitably results in predators killing far more of the prey species.